

### **REMARKS**

Claims 7-9, 11-14 and 16-18 are pending in the above-identified application. Claims 7-9, 11-14 and 16-18 were rejected. With this Amendment, claim 7 and 12 were amended and claims 19-21 were added. Accordingly, claims 7-9, 11-14 and 16-21 are at issue in the above-identified application.

### **Objection To Specification**

The disclosure was objected to because of informalities. Applicants have amended the specification, per the Examiner's request.

### **Objection To Claims**

Claims 7 and 12 were objected to because of informalities. Applicants have amended claims 7 and 12 to correct these informalities. Withdrawal of this objection is respectfully requested.

### **35 U.S.C. § 102 Anticipation Rejection of Claims and 35 U.S.C. § 103 Obviousness**

#### **Rejection of Claims**

Claims 7-9, 11-14, and 16-18 were rejected under 35 U.S.C. § 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Barker et al.* (U.S. Patent No. 6,528,033 B1). Claims 7-9, 11-14, and 16-18 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over *Barker et al.* and as evidenced by the CRC Handbook of Chemistry and Physics, 84<sup>th</sup> Edition, CRC Press, LLC 2004, p. 4-63). Applicants respectfully traverse these rejections.

Amended claim 7, from which claims 8, 9 and 11 depend, recites a method for the preparation of a cathode active material comprising  $\text{Li}_x\text{FePO}_4$  and a carbon material having a carbon content per unit weight being not less than 3 wt% and a powder density not lower than

2.2 g/cm<sup>3</sup>. The method comprises mixing a plurality of starting materials for synthesis for a compound represented by the general formula  $\text{Li}_x\text{FePO}_4$  and adding the carbon material at any time during the course of the mixing, milling and sintering, wherein lithium phosphate and iron phosphate hydrates are used as the starting material for the synthesis of  $\text{Li}_x\text{FePO}_4$ . None of the cited references, either alone or in combination, disclose using both lithium phosphate and iron phosphate hydrates as the starting materials for the synthesis of  $\text{Li}_x\text{FePO}_4$  and adding a carbon material at any time point during the course of the mixing, milling and sintering these starting materials, wherein the carbon material has a carbon content per unit weight not less than 3 wt% and a powder density not lower than 2.2g/cm<sup>3</sup>.

For example, while *Barker et al.* teaches the use of 0.5 mols of carbon, along with  $\text{FePO}_4$  and  $\text{Li}_2\text{CO}_3$  to synthesis  $\text{LiFePO}_4$ , it does not teach adding the carbon to a starting material which comprises lithium phosphate and iron phosphate hydrates. Additionally, while *Barker et al.* teaches using  $\text{Li}_3\text{PO}_4$  and  $\text{Fe}(\text{PO}_4)_2$  to synthesis  $\text{LiFePO}_4$ , as taught in Example III of *Barker et al.*, *Barker et al.* fails to teach or disclose adding carbon to the  $\text{Li}_3\text{PO}_4$  and  $\text{Fe}(\text{PO}_4)_2$ . In fact, none of the examples shown in *Barker et al.* teach or disclose the method recited in claim 7, which requires both the use of lithium phosphate and iron phosphate hydrates as starting materials for the synthesis of  $\text{Li}_x\text{FePO}_4$  and the adding of carbon material at any time point in the course of mixing, milling and sintering the starting materials.

Additionally, claim 21 recites a method for the preparation of a cathode active material, wherein the milling is carried out by one of a planetary ball mill, a shaker type ball mill, and a mechano-fusion mill. By using one of these mills, powerful crushing and mixing is performed and as a result the occurrence of impurities in positive active materials may be avoid and

nonaqueous electrolyte cells with superior cell capacity and cyclic characteristics can be prepared.

Therefore, for any of the above reasons, Applicants maintain that none of the above cited references, either alone or in combination, teach or even suggest Applicants claimed invention.

Withdrawal of this rejection is respectfully requested.

**Double Patenting**

Claims 7-9, and 11-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 10 of copending Application No. 09/961,895 in view of *Barker et al.* Claims 7-9, 11-14, and 16-18 all recite a method wherein lithium phosphate ( $\text{Li}_3\text{PO}_4$ ) and iron phosphate hydrides ( $\text{Fe}_3(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ , where  $n$  denotes the number of water molecules), are used as starting material for synthesis of  $\text{Li}_x\text{FePO}_4$ . Applicants maintain that none of the cited references, either alone or in combination, teach or disclose all the above limitations for the above stated reasons. Withdrawal of this rejection is respectfully requested.

In view of the foregoing, Applicant submits that the application is in condition for allowance. Notice to that effect is requested.

Respectfully submitted,

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